SORENSEN
POWER SUPPLIES

Instruction Manual

GENERAL MANUAL for

MULTI-OUTPUT RACK SYSTEMS and Accessories

Sorensen Company
676 Island Pond Road
Manchester, N.H. 03103
Tel: 603-668-4500
Twx: 710-220-1339

RAYTHEON

Digitized by the Internet Archive
in 2026

https://archive.org/details/manualsplus_11745

1058327 REV. - (1/83)
PRINTED IN USA
(Supercedes 166270 REV. A)

SORENSEN
POWER SUPPLIES

GENERAL MANUAL for MULTI-OUTPUT RACK SYSTEMS and Accessories

SORENSEN POWER SUPPLIES SORENSEN COMPANY
A RAYTHEON COMPANY
676 ISLAND POND ROAD MANCHESTER, NEW HAMPSHIRE 03103

TABLE of CONTENTS

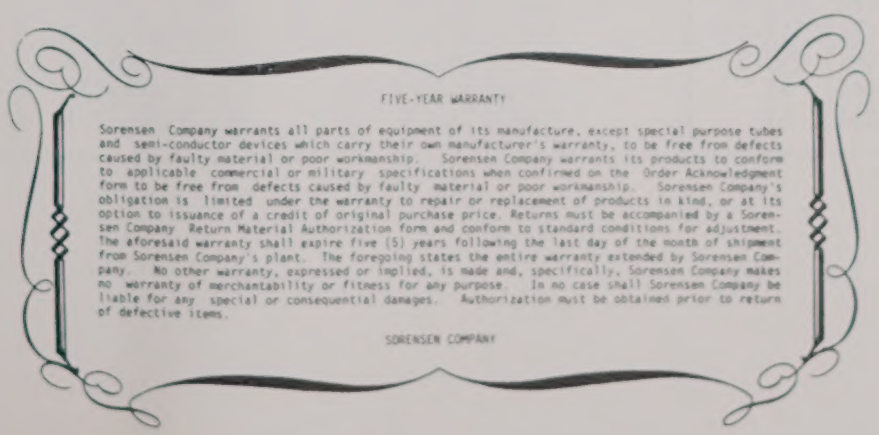
	PAGE
Introduction	iv
Sorensen Rack System	1
AC300/500 Rack Assemblies	3
AC319/519/522 Rack Assemblies	3
Front Panel Systems	5
Rack System Options	6
Module Accomodation	6
Replaceable Parts Lists	13

ILLUSTRATIONS

Figure No.	Title	Page
1	AC300/500 Rack Assemblies	2
2	AC319/519/522 Rack Assemblies	4
3	Typical Terminal Board Configurations	7
4	Chassis Slides	7
5	Panel Configurations	8
6	Schematic Diagram	9
7	Typical Power Supply Case Config. System 319	20
8	Typical Power Supply Case Config. System 519	21
9	Typical Power Supply Case Config. System 511	23

TABLES

Table No.	Title	Page
1	Sorensen Power Supply Module Sizes	1
2	Input Terminal Board Connections AC300/500	3
3	Model Specifications	16



FIVE-YEAR WARRANTY

Sorensen Company warrants all parts of equipment of its manufacture, except special purpose tubes and semi-conductor devices which carry their own manufacturer's warranty, to be free from defects caused by faulty material or poor workmanship. Sorensen Company warrants its products to conform to applicable commercial or military specifications when confirmed on the Order Acknowledgment form to be free from defects caused by faulty material or poor workmanship. Sorensen Company's obligation is limited under the warranty to repair or replacement of products in kind, or at its option to issuance of a credit of original purchase price. Returns must be accompanied by a Sorensen Company Return Material Authorization form and conform to standard conditions for adjustment. The aforesaid warranty shall expire five (5) years following the last day of the month of shipment from Sorensen Company's plant. The foregoing states the entire warranty extended by Sorensen Company. No other warranty, expressed or implied, is made and, specifically, Sorensen Company makes no warranty of merchantability or fitness for any purpose. In no case shall Sorensen Company be liable for any special or consequential damages. Authorization must be obtained prior to return of defective items.

SORENSEN COMPANY

INTRODUCTION

Industrial demand for modular power supplies continues to grow as newer, faster, and more efficient electronics systems are developed. Sorensen Company has kept pace with the medium power QSA and PTM series, the higher power (to 700 Watts) STM switching-transistor series, and the high performance SSD switching series.

Sorensen's power supply rack adapters provide multiple power output capability in a conveniently small space. Typical applications group several modular power supplies, with individual current meter readouts, and a switchable voltage meter readout, in a compact custom designed rack assembly. These supplies combine exceptional power density and high output efficiency with the convenience of rack mounting.

This manual provides general rack application data with photos, schematics, and parts lists. Mounting data for modular power supplies are detailed in the individual instruction manuals.

Also included in this manual are lists of currently available Sorensen modular power supplies. Included are module size designations and overall dimensions. This data can be used to determine space requirements in a particular rack assembly. Contact the factory, or your local representative, for assistance in confirming the feasibility of a particular configuration.

SORENSEN
RACK SYSTEMS

Sorensen rack assemblies offer a standard 19 inch (483mm) width, two heights and three depths. They are supplied with or without slide adaptors, and with or without metering.

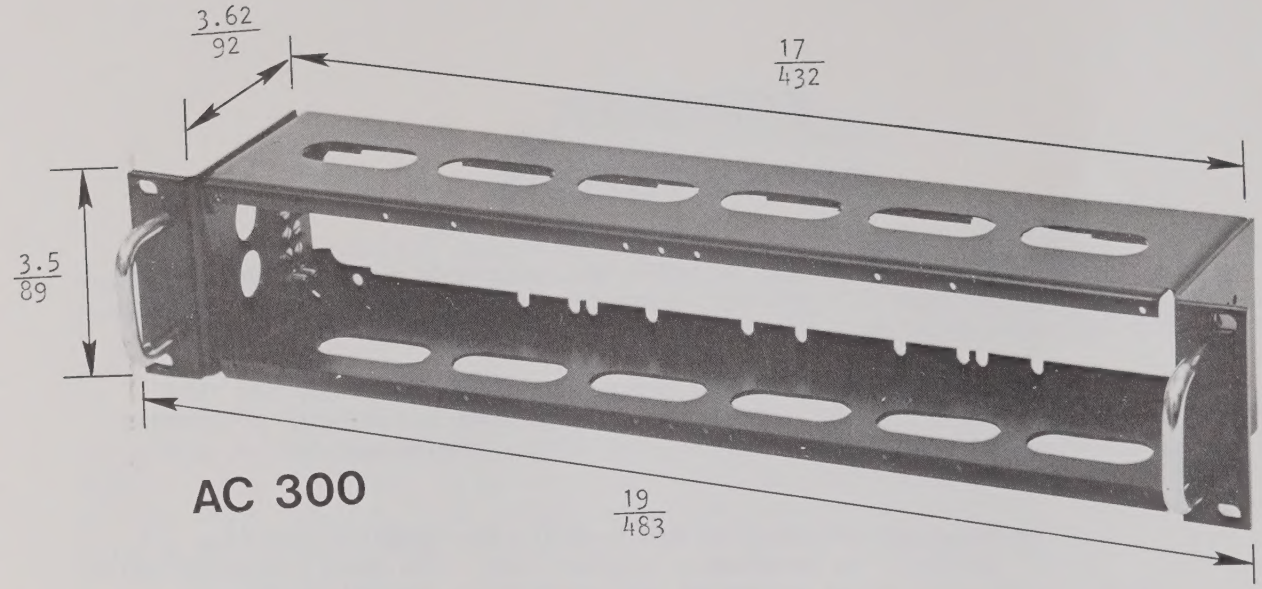
Any of Sorensen's modular power supplies may be inserted into single or multiple rack systems. These modulars include the DAP D/A programmer, the high efficiency SSD and STM switchers, the PTM's (single and duals), and the wide range QSA's.

The metering system consists of full rack metering panels, (Figure 5 for all products in Sorensen's modular line. The panels are available with a single, selectable scale voltmeter and up to four current monitoring meters. These panels are factory calibrated and are not designed for field installation.

Table 1

Sorensen Power-Supply
Module Sizes

Module	Height, inches (mm)	Width, inches (mm)	Depth, inches (mm)
I	3-5/16 (84)	3-7/8 (98)	6-1/2 (165)
II	3-5/16 (84)	5-1/8 (130)	6-1/2 (165)
III	3-5/16 (84)	5-1/8 (130)	9-1/2 (241)
IIIA	3-5/16 (84)	5-1/8 (130)	14 (356)
IIIB	5-1/8 (130)	5-1/8 (130)	9-1/2 (241)
IVA	4-15/16 (125)	7-1/2 (190)	10-1/2 (267)
IVB	4-15/16 (125)	7-1/2 (190)	11-1/2 (292)
VI	4-15/16 (125)	7-1/2 (190)	14 (356)
VIA	4-15/16 (125)	7-1/2 (190)	16 (406)



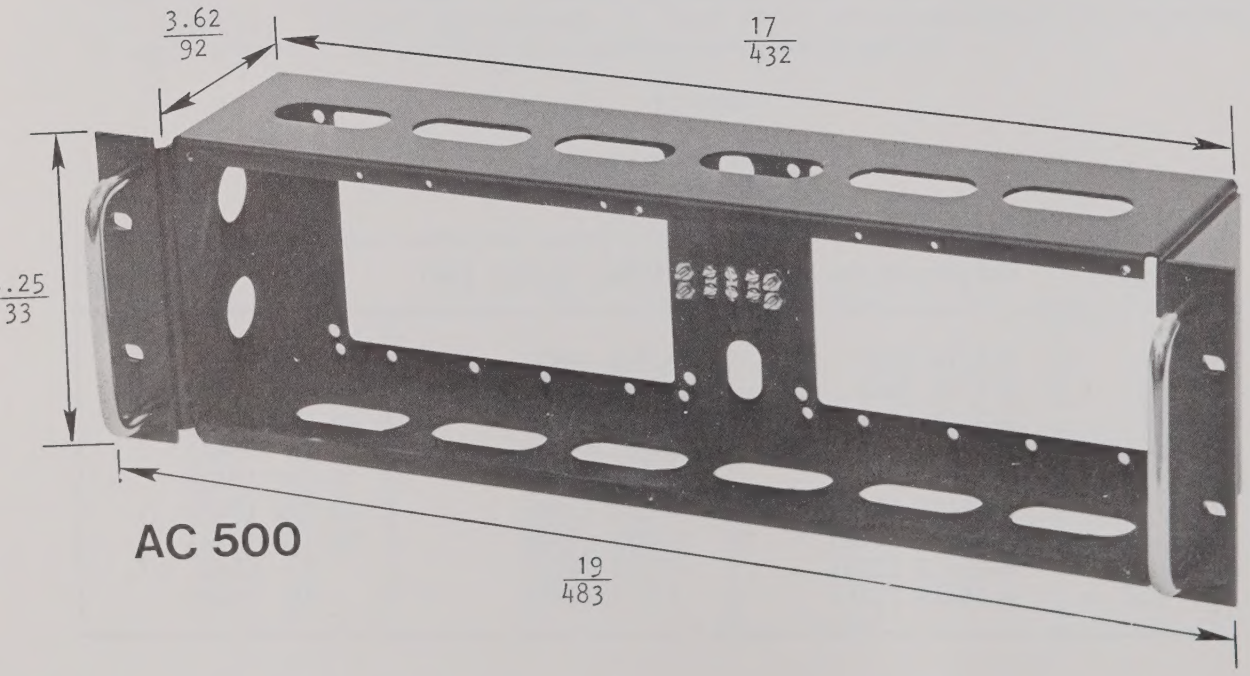


Figure 1: AC300 and AC500 Rack Assemblies

RACK ASSEMBLY DESCRIPTION

1. AC300/500 Rack Assemblies (Figure 1)

The AC300 and AC500 comprise the "short" 3-5/8 inch (93mm) depth series of Sorensen rack assemblies, differing only in height. The rack input terminal strip (TB1) is factory wired to each module in the assembly (Table 2) and it is only necessary to attach a line cord or other input wiring to this terminal strip. Power supply DC outputs are available at the individual module terminal strip.

Note

When mounting module size I units (Table 1) on the AC500 rack, two mounting brackets (Sorensen part number 73-2747) must be ordered separately.

Table 2

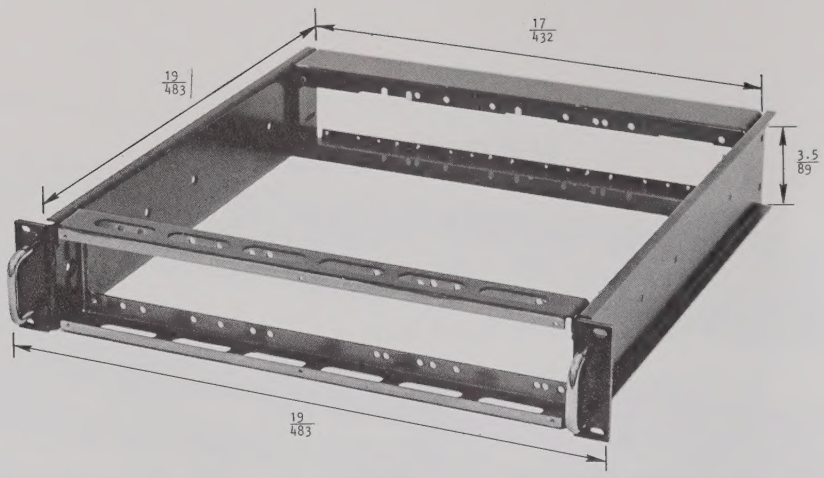
Module Series	TB1-1 Blk to Terminal: (AC High)	TB1-2 White to Terminal: (AC Low/Neutral)	TB1-3 Green to Terminal: (Chassis Grd)
QSA I, II, III (7-Terminal)	6*	7	5
PTM (All)	6	7	5
SSD & STM (All)	7	6	5

*If VP (overvoltage protector) is used, a-c line fuse (ref. QSA instruction manual) is wired in series with the black lead and this terminal.

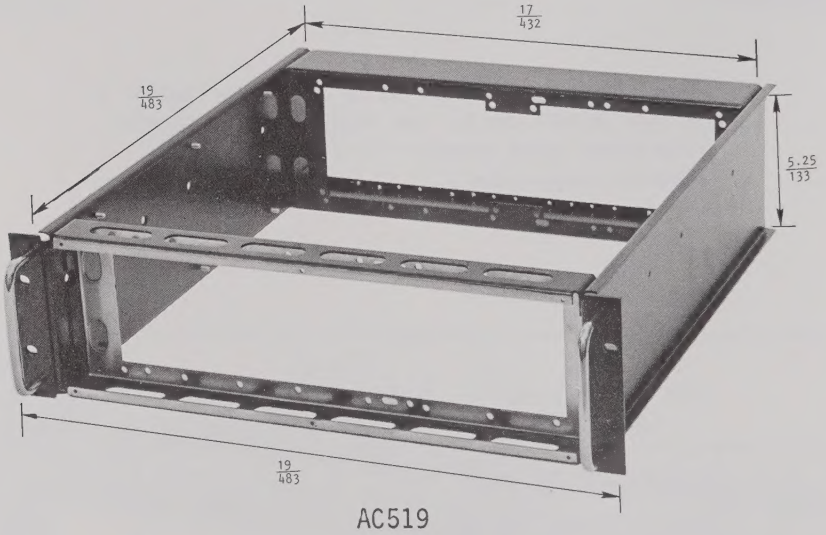
2. AC319/519/522 Rack Assemblies (See Figure 2)

These rack models comprise the standard series of Sorensen rack assemblies, with heights of 3-1/2 inches (92mm), and 5-1/4 inches (133mm), and depths of 19 inches (483mm) and 22 inches (559mm). See Figure 2. All AC inputs are factory wired and terminate at TB10. This terminal board is designed for 30 Amperes maximum, and includes a safety cover.

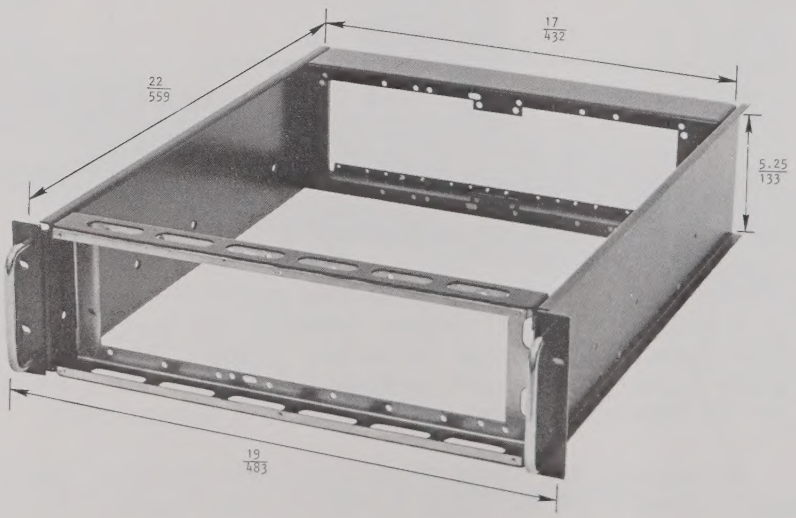
DC outputs are wired to an available terminal board located on the rear chassis (identified as TB1,2,3, etc.) See Figure 3 for typical arrangements.



AC319



AC519



AC522

Figure 2: AC319/519/522 Rack Assemblies

NOTE

All modules rated over 100 Amperes output will not be wired to a rear terminal board. Connect load wires directly to the module output terminals which are accessible from the rear by removing the cover plate. These wires can be run through the blank cover plate(provided) if desired, by drilling suitable entry holes.

All output terminal boards for 50 and 100 Amp units use separate Plus (+) and minus(-) Sense terminals, which are linked to the (+) output and (-) output terminals. These links may be removed when the remote sensing feature is desired.

CAUTION

Module terminal boards for 50 and 100 Amp units use separate (+) and (-) power control terminals. The small terminals (linked to output) are not intended for carrying load current.

3. Front Panel Systems

There are five panel arrangements available. These include various configurations of AC control, panel output adjust controls,voltmeter and ammeters. (See Figure 5).

Systems C,D,and E include a printed circuit board assembly (A1) mounted to the rear of the front panel. This PCB contains the panel potentiometers, the ammeter calibration potentiometers, and the voltmeter multiplier resistors.

System C provides up to five output voltage adjustment controls as shown.

Systems D and E provide up to four ammeters, each wired to a specific module. Voltage selector switch (S10), mounted on the panel, selects the module to be monitored and also connects the panel test jacks to that module. Note that the "Sense" terminal voltage is monitored rather than the output.

Dual output modules (such as the PTM Duals) are provided with a single ammeter (which reads the (+) output terminal current). The voltmeter monitors the total output voltage. (e.g.) A dual 15 volt module will read 30 volts on the voltmeter.

4. Rack System Options

1. AC Line Cord; Up to a maximum rating of 18 Amps, a line cord can be provided, connected to TB10.

2. Open Sense Diode Protection; For remote sensing applications. Prevents overvoltage conditions induced in the event of an accidental opening of the sense lead of a remotely sensed load. These diodes are wired behind the rear terminal board and are wired per the schematic diagram, Figure 6.

3. Chassis Slides. See Figure 4.

5. Module Accomodation

Each rack assembly can handle up to a maximum of five modules. (Maximum number depends on module size). In panel systems D and E, however, the fifth module cannot be metered or panel voltage controlled.

Some typical arrangements of modules are shown in Figures 7,8, and 9.

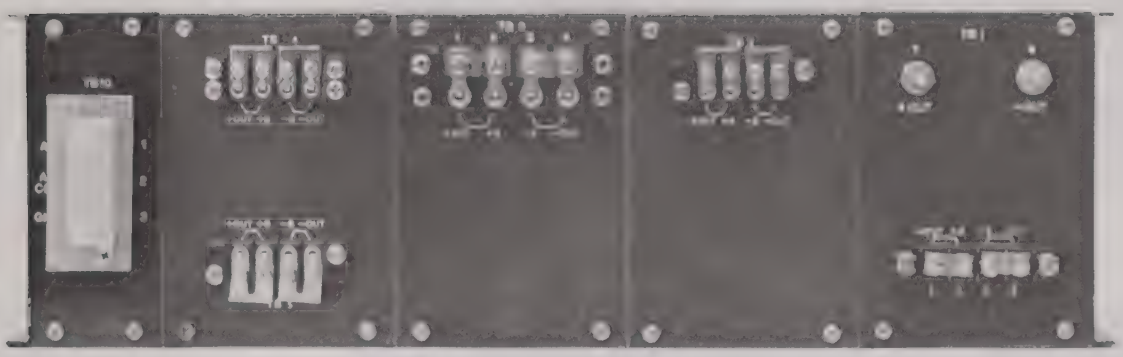
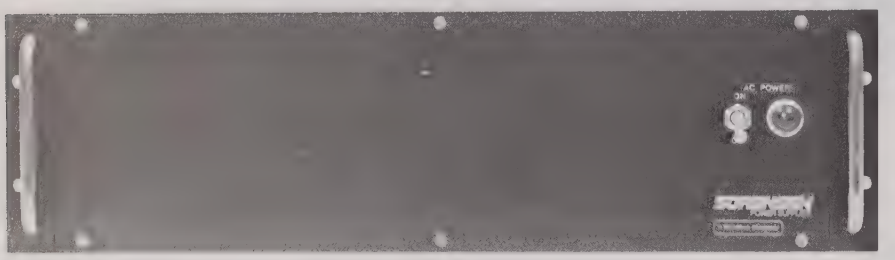


Figure 3 : Typical Terminal Board Configuration

Figure 4. Chassis Slides

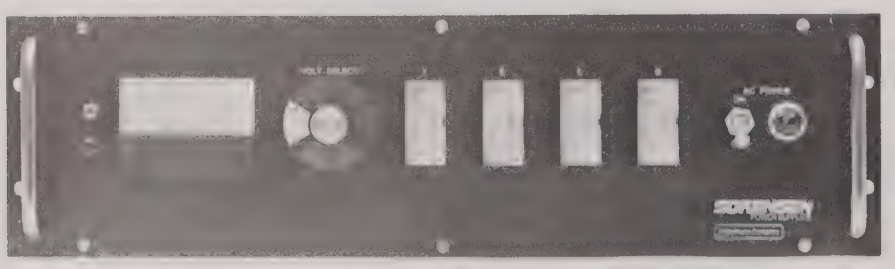
Model	*Sorensen Part No.*
AC319	*587552-1*
AC519	*587552-1*
AC522	*587552-2*

Panel A Blank panel.

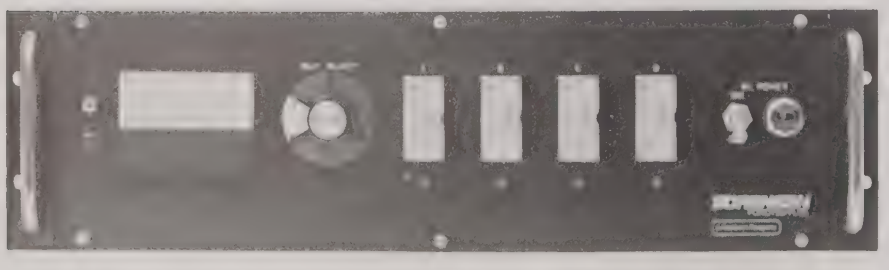


Panel B Circuit breaker and pilot light.

Panel C Circuit breaker, pilot light and output voltage adjustment controls.



Panel D Metered panel with test points voltage meter selection switch, current meters, breaker and light.



Panel E Metered panel, test point, voltage meter, selection switch, current meters, output adjustments breaker and pilot light.

Figure 5 Panel Configurations

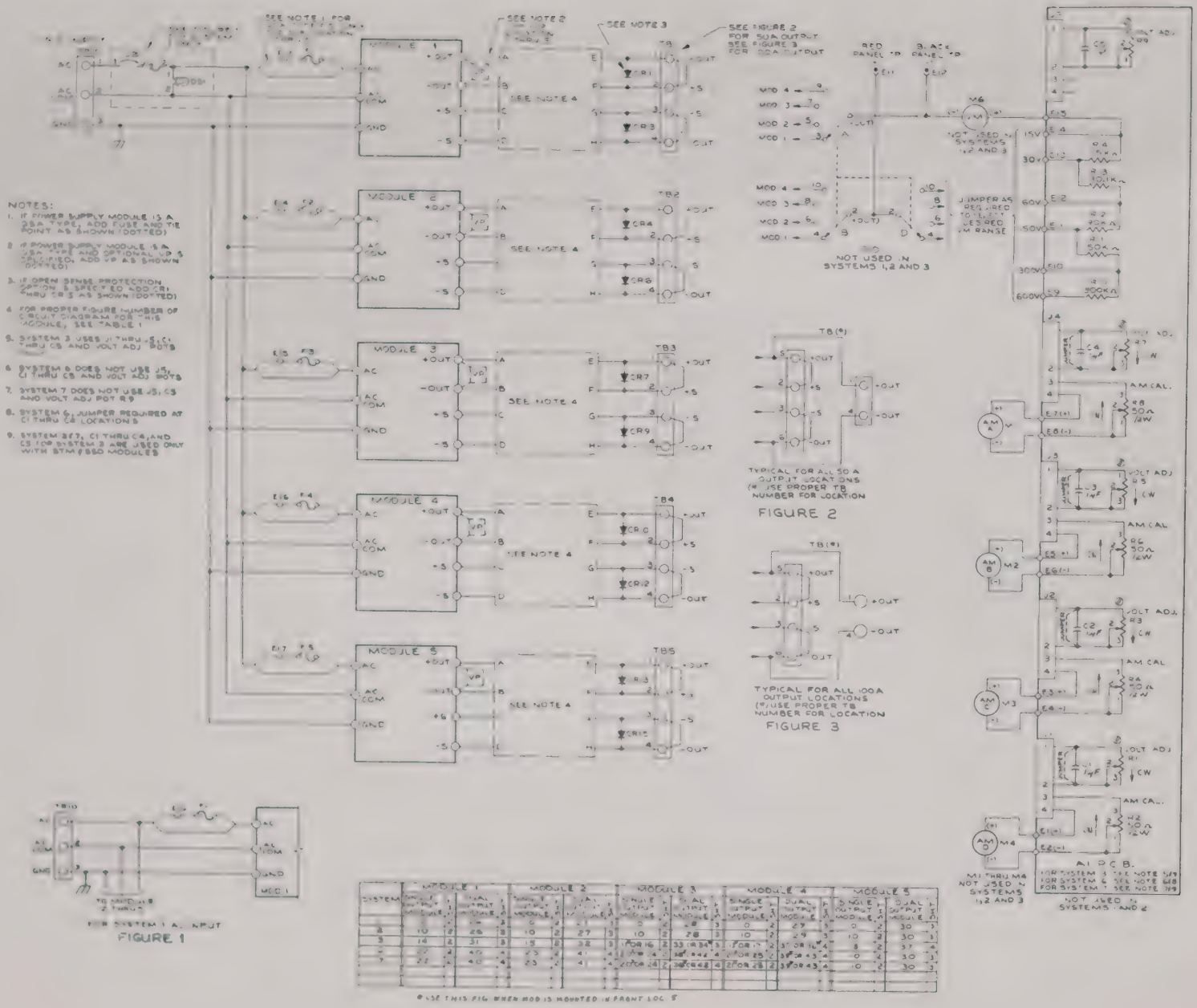

NOTES:
1. IF POWER SUPPLY MODULE IS A 25A TYPE, ADD FUSE AND TIE POINT AS SHOWN (DOTTED)
2. IF POWER SUPPLY MODULE IS A 25A TYPE AND OPTIONAL VP IS SPECIFIED, ADD VP AS SHOWN (DOTTED)
3. IF OPEN SENSE PROTECTION OPTION B SPECIFIED ADD CR1 THRU CR5 AS SHOWN (DOTTED)
4. FOR PROPER FIGURE NUMBER OF CIRCUIT DIAGRAM FOR THIS MODULE, SEE TABLE 1
5. SYSTEM 3 USES J1 THRU J5, C1 THRU C5 AND VOLT ADJ POTS
6. SYSTEM 6 DOES NOT USE J5, C1 THRU C5 AND VOLT ADJ POTS
7. SYSTEM 7 DOES NOT USE J5, C5 AND VOLT ADJ POT R9
8. SYSTEM 6, JUMPER REQUIRED AT C1 THRU C4 LOCATION 5
9. SYSTEM 3 (7), C1 THRU C4, AND C5 FOR SYSTEM 3 ARE USED ONLY WITH BTM #660 MODULES
SEE NOTE 1 FOR
SEE NOTE 2
SEE NOTE 3
SEE FIGURE 2 FOR 50A OUTPUT SEE FIGURE 3 FOR 100A OUTPUT
MODULE 1
MODULE 2
MODULE 3
MODULE 4
MODULE 5
SEE NOTE 4
TB1
TB2
TB3
TB4
TB5
TO MODULE 2 THRU 5
FOR SYSTEM 1 A. INPUT
FIGURE 1
TB(*)
TYPICAL FOR ALL 50 A OUTPUT LOCATIONS (*) USE PROPER TB NUMBER FOR LOCATION
FIGURE 2
TYPICAL FOR ALL 100A OUTPUT LOCATIONS (*) USE PROPER TB NUMBER FOR LOCATION
FIGURE 3
RED PANEL +D
BLACK PANEL -D
NOT USED IN SYSTEMS 1,2 AND 3
JUMPER AS REQUIRED TO SELECT VM RANGE
NOT USED IN SYSTEMS 1, 2 AND 3
AM CAL.
VOLT ADJ.
A1 P.C.B.
M1 THRU M4 NOT USED IN SYSTEMS 1,2 AND 3
NOT USED IN SYSTEMS 1 AND 4
SYSTEM
MODULE 1
MODULE 2
MODULE 3
MODULE 4
MODULE 5
SINGLE OUTPUT
DUAL OUTPUT
* USE THIS FIG. WHEN MOD IS MOUNTED IN FRONT LOC. 5

Figure 6: Schematic Diagram

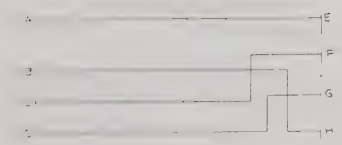


FIGURE 10
SYSTEM 1 AND 2
MODULE 1,2,3,4 AND 5
SYSTEM 6 AND 7 – MODULE N LOC 5

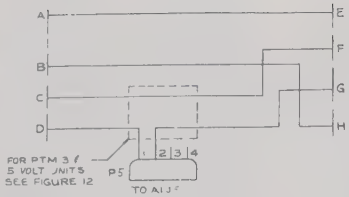


FIGURE 14
SYSTEM 2 – MODULE 1

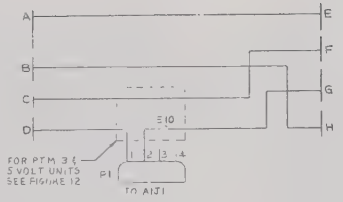


FIGURE 18
SYSTEM 3 – MODULE 5 IN LOC 5

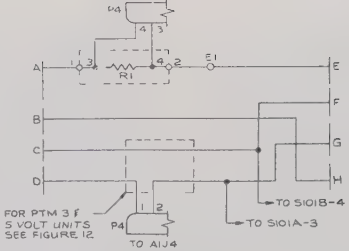


FIGURE 22
SYSTEM 6 f 7 – MODULE 1

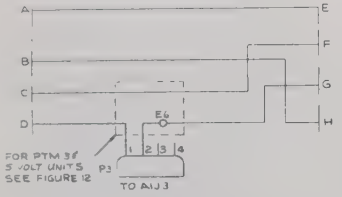


FIGURE 11
SYSTEM 3 – MODULE 3 IN LOC 5

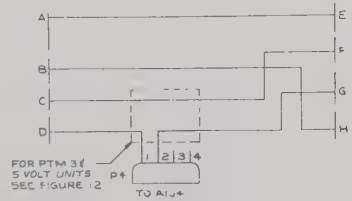


FIGURE 15
SYSTEM 3 – MODULE 2

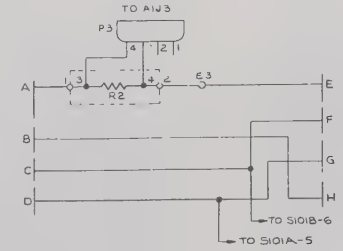


FIGURE 19

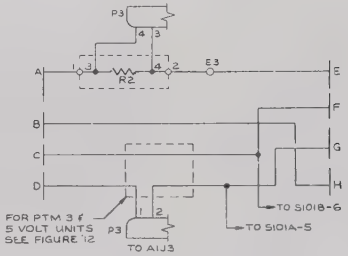


FIGURE 23
SYSTEM 6 f 7 – MODULE 2

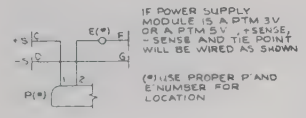

IF POWER SUPPLY
MODULE IS A PTM 3V
OR A PTM 5V, +SENSE,
– SENSE AND TIE POINT
WILL BE WIRED AS SHOWN
(*) USE PROPER P AND
E NUMBER FOR
LOCATION

FIGURE 12

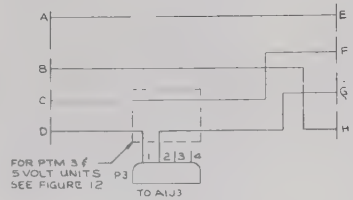


FIGURE 16
SYSTEM 3 – MODULE 3

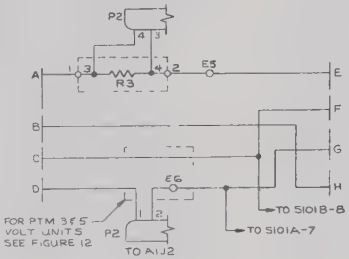


FIGURE 20
SYSTEM 6 f 7 – MODULE 3; LOC 5

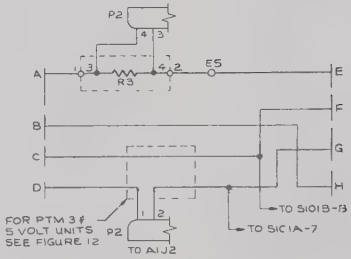


FIGURE 24
SYSTEM 6 f 7 – MODULE 3

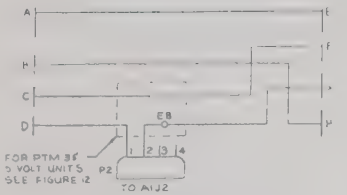


FIGURE 13
SYSTEM 3 – MODULE 4 IN LOC 5

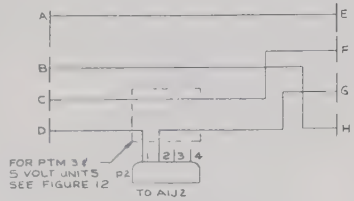


FIGURE 17
SYSTEM 3 – MODULE 4

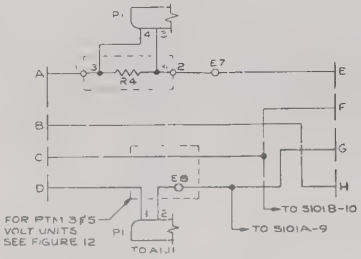


FIGURE 21
SYSTEM 6 f 7 – MODULE 4; LOC 5

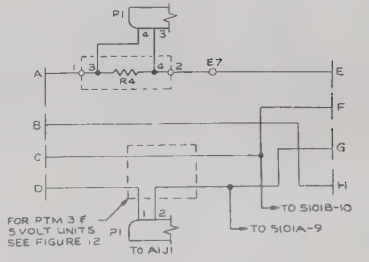


FIGURE 25
SYSTEM 6 f 7 MODULE 4

Figure 6: Cont.

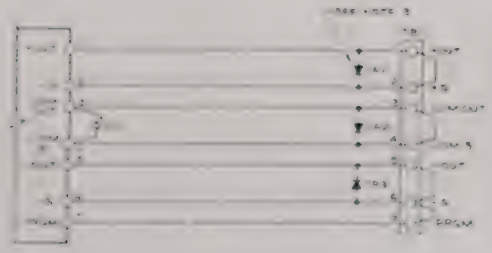


FIGURE 26
SYSTEM 1 AND 2 - MODULE 1

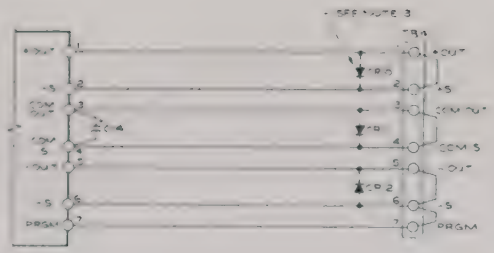


FIGURE 29
SYSTEM 1 AND 2 - MODULE 4

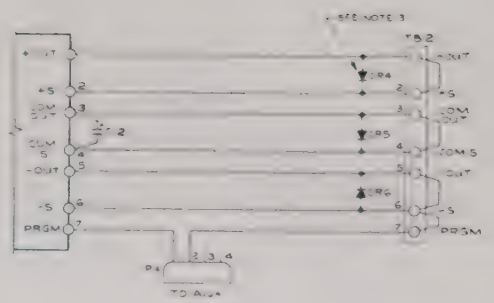


FIGURE 32
SYSTEM 3 - MODULE 2

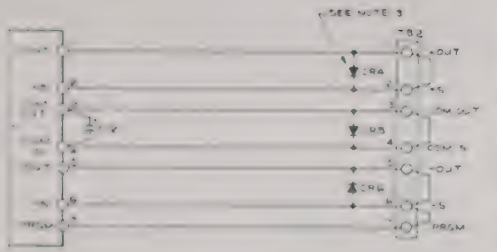


FIGURE 27
SYSTEM 1 AND 2 - MODULE 2

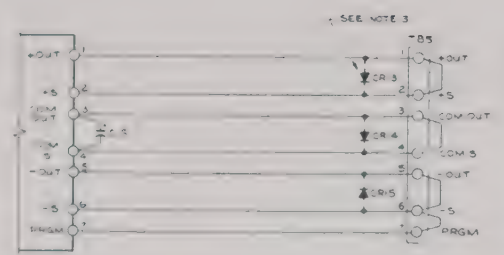


FIGURE 30
SYSTEM 1,2,6 AND 7 - MODULE 5

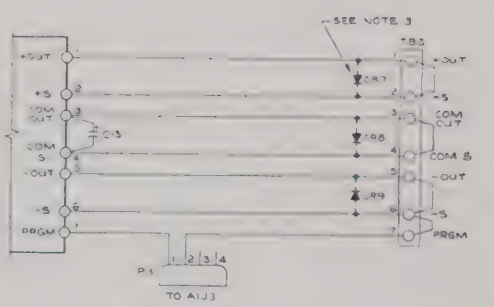


FIGURE 33
SYSTEM 3 - MODULE 3

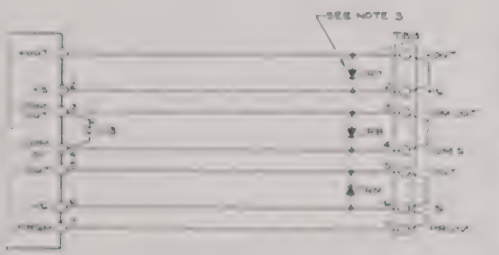


FIGURE 28
SYSTEM 1 AND 2 - MODULE 3

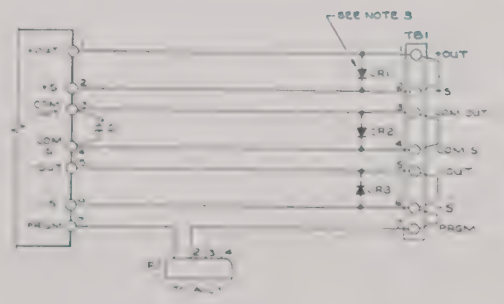


FIGURE 31
SYSTEM 3 - MODULE 1

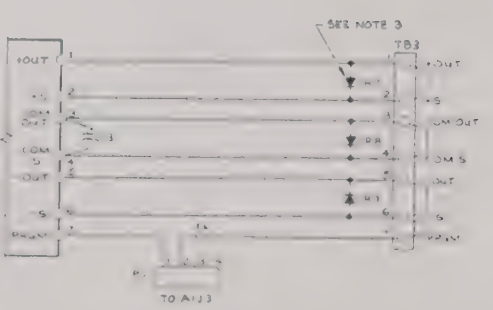


FIGURE 34
SYSTEM 3 - MODULE 3 IN LOC 5

Figure 6: Cont.

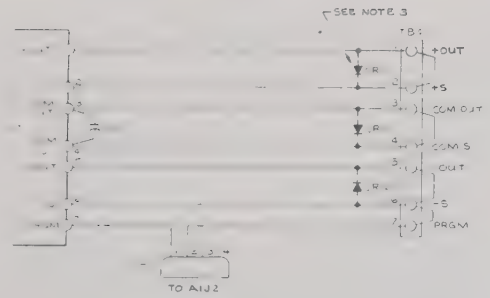


FIGURE 35
SYSTEM 3 - MODULE 4

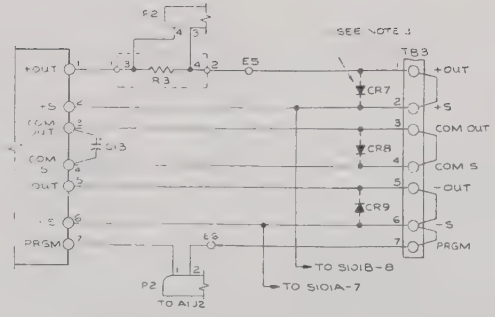


FIGURE 38
SYSTEM 6&7 - MODULE 3; LOC 5

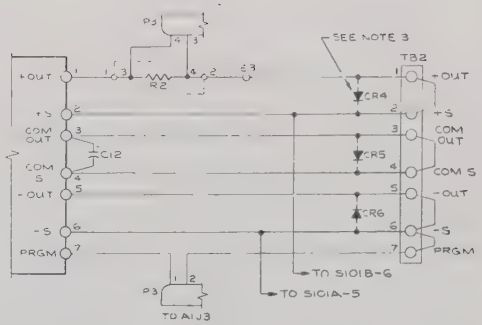


FIGURE 41
SYSTEM 6&7 - MODULE 2

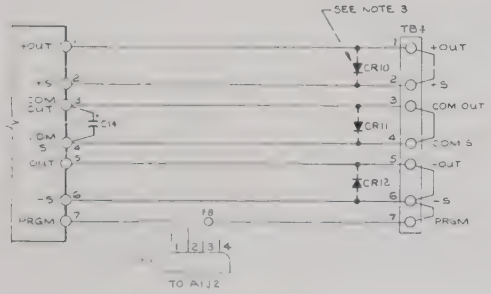


FIGURE 36
SYSTEM 2 - MODULE 4 IN LOC 5

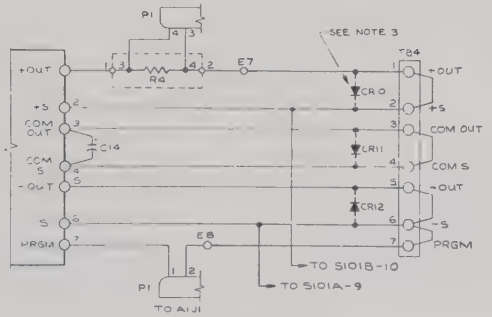


FIGURE 39
SYSTEM 6&7 - MODULE 4; LOC 5

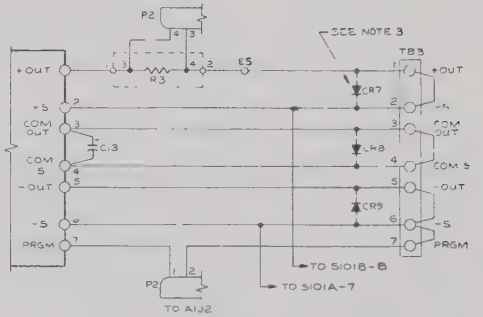


FIGURE 42
SYSTEM 6&7 - MODULE 3

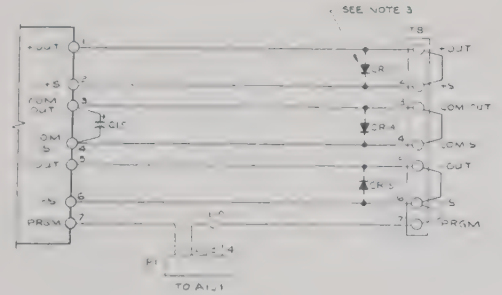


FIGURE 37
SYSTEM 3 - MODULE 5 IN LOC 5

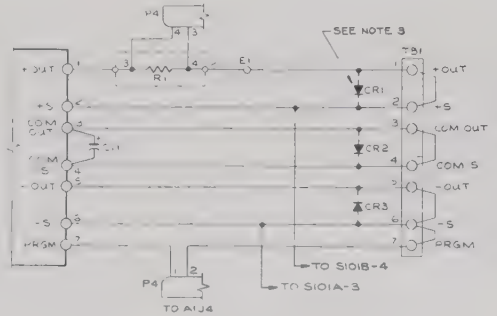


FIGURE 40
SYSTEM 6&7 - MODULE 1

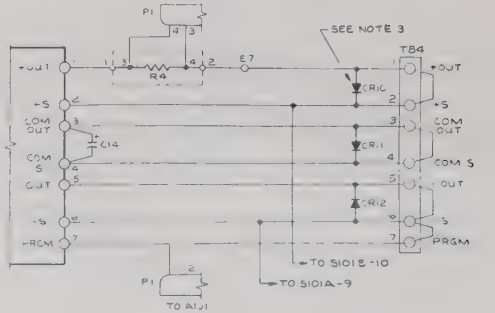


FIGURE 43
SYSTEM 6&7-MODULE 4

Figure 6: Cont.

REPLACEABLE PARTS LISTS

I. Parts Common to Systems B,C,D, and E.

NOTE

System A has no replaceable panel ass'y parts

Circuit Symbol	Description	Sorensen Part No.
CB1	Circuit Breaker, 30A	982296-1
DS1	Pilot Lamp Socket	982760-2
	Bulb, NE-51H	277-7003P1

II. Parts Common to Systems C and E.
(A1) PCB Output Adjust Potentiometers R1,3,5,7, and 9.

STM MODELS (Add 1.0uF capacitor across pot. per Schematic Fig. 6 Sorensen Part Number 24-2037-19).

Model Voltage	Pot. (Ohms)	Pot Setting (V)	Min Panel Range (V)	Sorensen Part No.
5V	2K	4.5	4.5-6.0	586371-5
12V	5K	9.5	9.5-13.5	586371-6
15K	5K	13.0	13-17	586371-6
24V	10K	19.0	19-25	586371-7
28V	10K	24.0	24-30	586371-7
48V	20K	42.0	42-56	586371-8

SSD MODELS (Add 1.0uF capacitor across Pot. per Schematic Fig. 6 Sorensen Part Number 24-2037-19).

5V	5K	4.7	4.7-6.5	586371-6
9V	5K	6.5	6.5-9.5	586371-6
12V	5K	9.5	9.5-13.0	586371-6
15V	10K	13.0	13-17	586371-7
18V	10K	16.0	16-21	586371-7
24V	10K	20.0	20-26	586371-7
28V	20K	25.0	25-32	586371-8
36V	20K	32.0	32-43	586371-8
48V	20K	42.0	42-56	586371-8

QSA MODELS (Ref. Schematic Diagram Fig. 6)

Model Voltage	Pot.(Ohms)	PotSetting(V)	Min. Panel Range (V)	Sorensen Part No.
10V	1K	1.0	1-10	586371-4
18V	0.5K	14.0	14-22	586371-3
48V	1K	40.0	40-60	586371-4
75V	1K	60.0	60-80	586371-4
120V	1K	110.0	110-130	586371-4
175V	5K	150.0	150-200	586371-6
265V	5K	230.0	230-280	586371-6

PTM MODELS (Ref. Schematic Diagram Fig. 6)

3V	1K	2.8	2.8-3.5	586371-4
5V	1K	4.8	4.8-5.5	586371-4
12V	1K	11.4	11.4-12.6	586371-4
15V	1K	14.2	14.2-15.8	586731-4
24V	2K	23.0	23-25	586731-5
28V	2K	27.0	27-29	586731-5

PTM DUAL MODELS (Ref. Schematic Diagram Fig.6)

±12V	2K	11.0	11-13	586731-5
±15V	2K	14.0	14-16	586731-5

III. Parts Common to Systems D and E.

A. PANEL PARTS

Circuit Symbol	Description	Sorensen Part No.
S1	Output Selector Switch	587443-1
M6	Voltmeter (0-15/30/60/300/600)	587359-1
M1,M2 M3,M4,	Ammeters	(Please see next page)

Ammeter Rating (A)	Ammeter Sorensen P/N	Shunt Sorensen P/N
0-0.3	587358-14	587599-5
0-0.6	587358-1	587599-4
0-1	587358-2	587599-3
0-2	587358-3	587599-2
0-3	587358-4	587599-1
0-5	587358-5	587560-3
0-10	587358-6	587560-2
0-15	587358-12	587560-1
0-20	587358-7	587559-3
0-30	587358-8	587559-2
0-40	587358-9	587559-1
0-50	587358-15	587559-4
0-60	587358-10	588151-1
0-80	587358-13	588151-7
0-120	587358-11	588151-2

B. A1 Printed Circuit Board Parts

Circuit Symbol	Description	Sorensen Part No.
R2/4/6/8	Trim Pot. 50 Ohms	167877-20
R10	Multiplier 300K,1/2W,2%	586056-132
R11	Multiplier 150K,1/2W,2%	586056-125
R12	Multiplier 91K,1/2W,2%	586056-120
R13	Multiplier 30.1K,1/2W,1%	586250-185
R14	Multiplier 15K,1/2W,1%	586250-145

IV. QSA Model Parts

When factory installed in a rack assembly, an AC line fuse is added to protect the module. This fuse is mounted to a bracket which is attached to the in-board end of the module. This bracket is also used to mount the overvoltage protection option (VP1/3/8/23). The fuse value is given in the QSA manual for each specific model.

F1/2/3/4/5 Values	Sorensen Part Number
0.75A	226-7176P38
1A	226-7176P39
1.5A	226-7176P41
2.0A	226-7176P43
2.5A	226-7176P71

Table 3: Model Specifications

Model Specifications

Single Output Power Supplies

	Current @40°C	Input Voltage		Regulation		Ripple		Weight	Case
	A dc	V ac	V dc	Line	Load	mVrms (typ)	mV pk-pk (typ)	lb/kg	
3 Volt									
PTM 3-11	11	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	11.0/5.0	III
5 Volt									
PTM 5-4	4	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	5.5/2.5	I
PTM 5-7	7	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	7.5/3.4	II
PTM 5-11	11	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	11.0/5.0	III
PTM 5-16	16	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	13.5/6.1	IIIB
STM 5-24	24	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	9/4.1	III
SSD 5-30	30	115/220	255-345	0.02% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
STM 5-36	36	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	9/4.1	IIIA
SSD 5-45	45	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	IIIA
STM 5-60	60	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	17.25/7.8	IVA
SSD 5-75	75	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	14/6.4	IVB
STM 5-100	100	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	23.75/10.7	VI
SSD 5-120	120	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA
SSD 5-150	150	115/220	270-350	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA
SSD 5-225	225	115/220	270-350	0.01% + 1mV	0.01% + 1mV	7	80	32/14.5	X
9 Volt									
SSD 9-20	20	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
SSD 9-30	30	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	7.5/3.4	IIIA
SSD 9-50	50	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	14/6.4	IVB
SSD 9-80	80	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA

Model Specifications

Single Output Power Supplies (con't.)

	Current @40 C A dc	Input Voltage V ac	V dc	Regulation Line	Regulation Load	Ripple mV rms (typ)	Ripple mV pk-pk (typ)	Weight lb/kg	Case
12 Volt									
PTM 12-2.7	2.7	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	5.5/2.5	I
PTM 12-4.4	4.4	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	7.5/3.4	II
PTM 12-6.5	6.5	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	11.0/5.0	III
PTM 12-10.5	10.5	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	13.5/6.1	IIIB
STM 12-12	12	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	6.5/2.9	III
SSD 12-15	15	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
STM 12-20	20	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	9.0/4.1	IIIA
SSD 12-22	22	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	7.5/3.4	IIIA
STM 12-30	30	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	17.25/7.8	IVA
SSD 12-38	38	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	14/6.4	IVB
STM 12-50	50	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	23.75/10.7	VI
SSD 12-60	60	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA
15 Volt									
PTM 15-2.4	2.4	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	5.5/2.5	I
PTM 15-3.5	3.5	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	7.5/3.4	II
PTM 15-5.5	5.5	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	11.0/5.0	III
PTM 15-9.5	9.5	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	13.5/6.1	IIIB
STM 15-10	10	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	6.5/2.9	III
SSD 15-12	12	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
STM 15-15	15	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	9.0/4.1	IIIA
SSD 15-18	18	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	7.5/3.4	IIIA
STM 15-24	24	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	17.5/7.8	IVA
SSD 15-32	32	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	14/6.4	IVB
STM 15-32	32	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	23.75/10.7	VI
SSD 15-45	45	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA
18 Volt									
SSD 18-10.5	10.5	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
SSD 18-16	16	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	7.5/3.4	IIIA

Model Specifications

Single Output Power Supplies (con't.)

	Current @40°C	Input Voltage		Regulation		Ripple		Weight	Case
	A dc	V ac	V dc	Line	Load	mVrms (typ)	mV pk-pk (typ)	lb/kg	
24 Volt									
PTM 24-1.6	1.6	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	5.5/2.5	I
PTM 24-2.3	2.3	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	7.5/3.4	II
PTM 24-4	4.	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	11.0/5.0	III
PTM 24-6.8	6.8	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	13.5/6.1	IIIB
STM 24-8.5	8.5	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	6.5/2.9	III
SSD 24-8.5	8.5	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
STM 24-13	13.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	9.0/4.1	IIIA
SSD 24-13	13.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	7.5/3.4	IIIA
STM 24-21	21.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	17.25/7.8	IVA
SSD 24-22	22.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	14/6.4	IVB
STM 24-28	28.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	23.75/10.7	VI
SSD 24-32	32.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA
28 Volt									
PTM 28-1.4	1.4	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	5.5/2.5	I
PTM 28-2	2.	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	7.5/3.4	II
PTM 28-3.5	3.5	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	11.0/5.0	III
PTM 28-6	6.	115/220/230		0.02% + 1mV	0.03% + 4mV	1	5	13.5/6.1	IIIB
STM 28-7	7.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	6.5/2.9	III
SSD 28-7	7.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
STM 28-11	11.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	9.0/4.1	IIIA
SSD 28-11	11.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	7.5/3.4	IIIA
STM 28-18	18.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	17.5/7.8	IVA
SSD 28-18	18.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	14/6.4	IVB
STM 28-24	24.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	23.75/10.7	VI
SSD 28-25	25.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA
36 Volt									
SSD 36-5	5.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
SSD 36-8	8.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	7.5/3.4	IIIA
SSD 36-12	12.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	14/6.4	IVB
SSD 36-19	19.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA
48 Volt									
STM 48-4	4.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	6.5/2.9	III
SSD 48-4	4.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	5.5/2.5	III
STM 48-6	6.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	9.0/4.1	IIIA
SSD 48-6	6.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	5	20	7.5/3.4	IIIA
STM 48-10	10.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	17.25/7.8	IVA
SSD 48-10	10.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	14/6.5	IVB
STM 48-14	14.	115	127-173	0.025% + 1mV	0.025% + 1mV	5	30	23.75/10.7	VI
SSD 48-15	15.	115/220	255-345	0.01% + 1mV	0.01% + 1mV	12	60	21.5/9.8	VIA

Model Specifications

Dual Output Power Supplies

	Current @40°C Adc	Input Voltage Vac	Regulation Line	Regulation Load	Ripple mVrms (typ)	Ripple mV pk-pk (typ)	Weight lb/kg	Case
+12 Volt								
PTM 12/1D	1.	115/220/230	0.01% + 1mV	0.01% + 1mV	1	5	5.5/2.5	I
PTM 12/1.6D	1.6	115/220/230	0.01% + 1mV	0.01% + 1mV	1	5	7.5/3.4	II
PTM 12/3D	3.	115/220/230	0.01% + 1mV	0.01% + 1mV	1	5	13.5/6.1	III
+15 Volt								
PTM 15/.8D	0.8	115/220/230	0.01% + 1mV	0.01% + 1mV	1	5	5.5/2.5	I
PTM 15/1.5D	1.5	115/220/230	0.01% + 1mV	0.01% + 1mV	1	5	7.5/3.4	II
PTM 15/2.8D	2.8	115/220/230	0.01% + 1mV	0.01% + 1mV	1	5	13.5/6.1	III

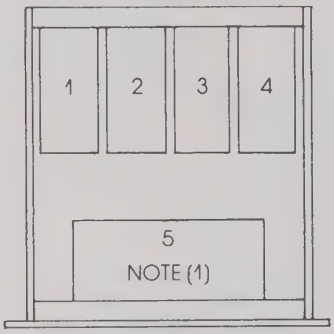
Wide Range Adjustable Output Power Supplies

0-10 Volt								
QSA 10-1.4	1.5	115/220/230	.004% + 0.2mV	.008% + 0.2mV	0.3 (max)	3 (max)	5.5/2.5	I
QSA 10-2.2	2.4	115/220/230	.004% + 0.2mV	.008% + 0.2mV	0.3 (max)	3 (max)	7.5/3.4	II
QSA 10-3.7	4.0	115/220/230	.004% + 0.2mV	.008% + 0.2mV	0.3 (max)	3 (max)	13.5/6.1	III
14-22 Volt								
QSA 18-1.1	1.2	115/220/230	.008%	.012%	0.3 (max)	3 (max)	5.5/2.5	I
QSA 18-1.9	2.1	115/220/230	.008%	.012%	0.3 (max)	3 (max)	7.5/3.4	II
QSA 18-3.0	3.3	115/220/230	.008%	.012%	0.3 (max)	3 (max)	13.5/6.1	III
35-60 Volt								
QSA 48-0.4	0.44	115/220/230	.008%	.012%	0.3 (max)	3 (max)	5.5/2.5	I
QSA 48-0.8	0.88	115/220/230	.008%	.012%	0.3 (max)	3 (max)	7.5/3.4	II
QSA 48-1.2	1.3	115/220/230	.008%	.012%	0.3 (max)	3 (max)	13.5/6.1	III
60-90 Volt								
QSA 75-0.5	0.55	115/220/230	.008%	.012%	0.3 (max)	3 (max)	7.5/3.4	II
QSA 75-0.8	0.88	115/220/230	.008%	.012%	0.3 (max)	3 (max)	13.5/6.1	III
90-150 Volt								
QSA 120-0.5	0.55	115/220/230	.008%	.012%	0.3 (max)	3 (max)	13.5/6.1	III
150-200 Volt								
QSA 175-0.25	0.28	115/220/230	.008%	.012%	0.3 (max)	3 (max)	13.5/6.1	III
200-330 Volt								
QSA 265-0.15	0.17	115/220/230	.008%	.012%	0.3 (max)	3 (max)	13.5/6.1	III

Figure 7: Typical Power Supply Case Configurations,System 319

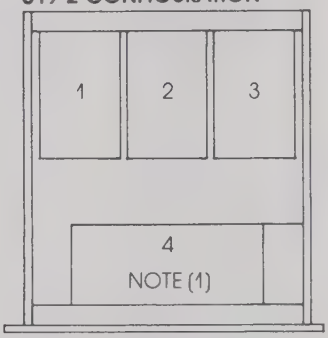
Typical Power Supply Case Configurations

319-1 CONFIGURATION



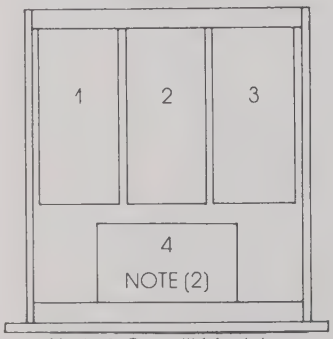
Up to 5 Case I Modules

319-2 CONFIGURATION



Up to 4 Case II Modules

319-3 CONFIGURATION



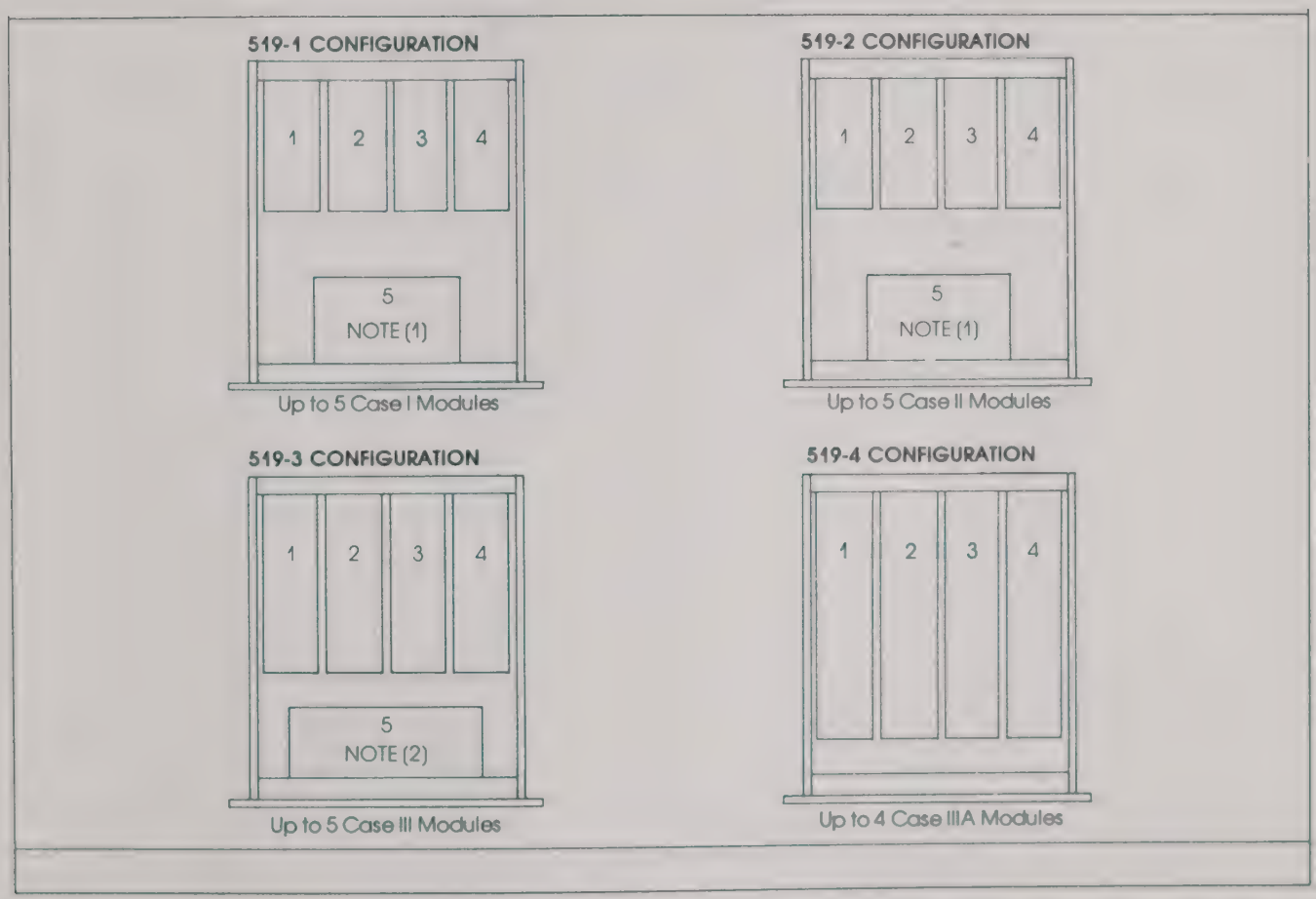
Up to 3 Case III Modules

319-4 CONFIGURATION

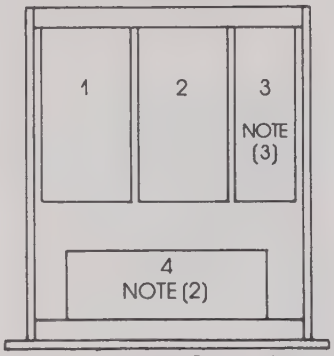
Up to 3 Case IIIA Modules

NOTES:
(1) Case IIIA, III, II or I allowable in this position.
(2) Module I allowable in this position provided no QSA with OVP is mounted in positions 1-3.

Figure 8: Typical Power Supply Case Configurations, System 519

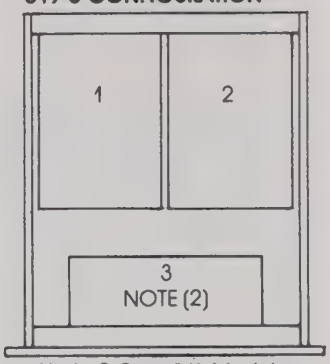


519-5 CONFIGURATION



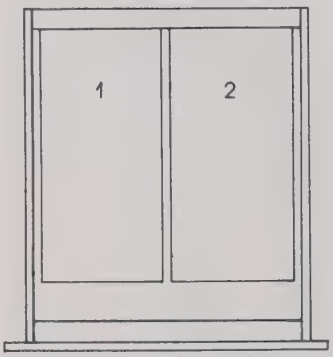
Up to 2 Case IIIB Modules

519-6 CONFIGURATION



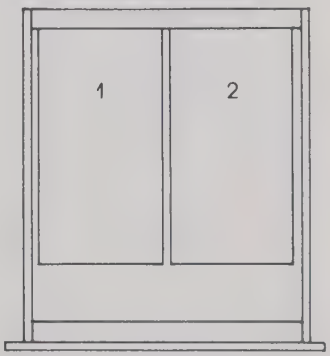
Up to 2 Case IVA Modules

519-7 CONFIGURATION



Up to 2 Case VI Modules

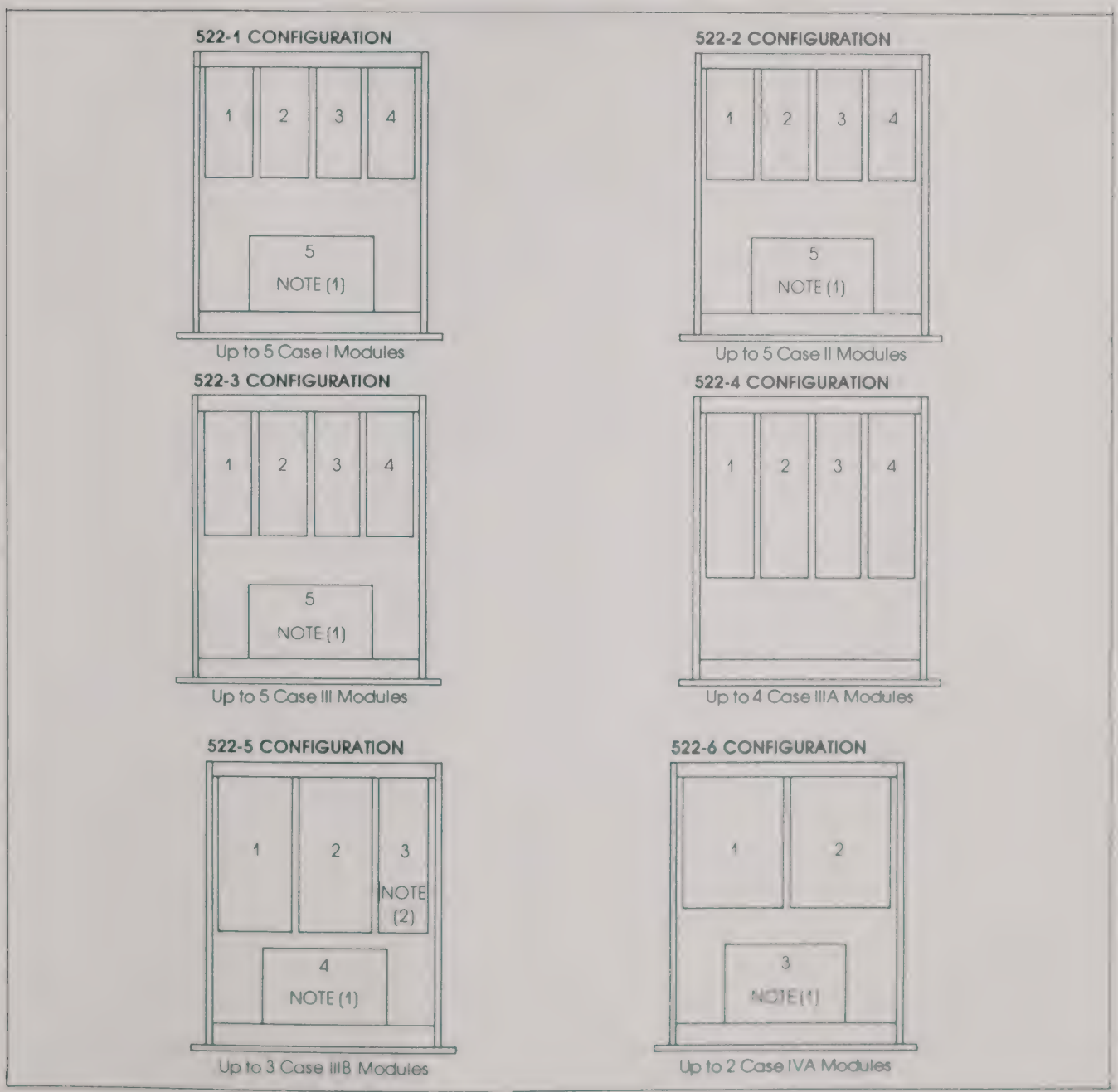
519-8 CONFIGURATION



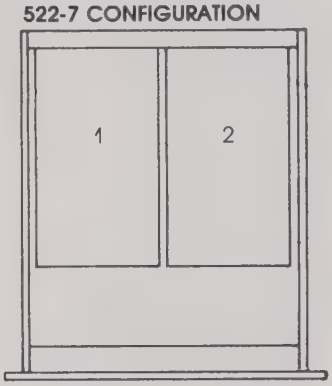
Up to 2 Case IVB Modules

NOTES:
(1) Case IIIB, IIIA, III, II or I allowable in this position.
(2) Case IIIA, III, II or I allowable in this position provided no QSA with OVP is mounted in positions 1-4.
(3) Module III, II, or I allowable in this position.

Figure 9: Typical Power Supply Case Configurations, System 522

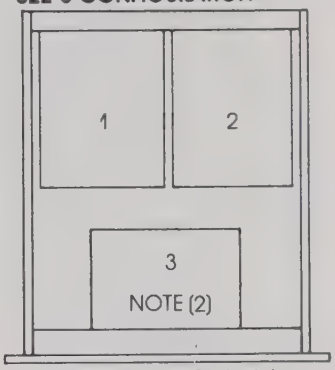


522-7 CONFIGURATION



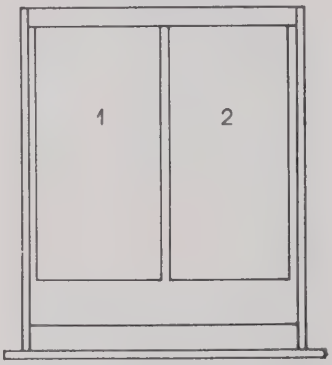
Up to 2 Case VI Modules

522-8 CONFIGURATION



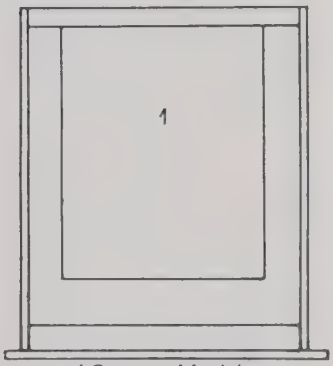
Up to 2 Case IVB Modules

522-9 CONFIGURATION



Up to 2 Case VIA Modules

522-10 CONFIGURATION



1 Case x Module

NOTES:
(1) Case IIIB, IIIA, III, II or I allowable in this position.
(2) Case III, II, or I allowable in this position.

SERVICE NOTES

FIELD SERVICE REPRESENTATIVES

EASTERN AREA

Ampower Electronic Instrument Co., Inc.
26 Just Road
Fairfield, New Jersey 07006
Tel: (201)227-7720

Applied Metrology Inc.
10067 N. 2nd Street
Laurel, Maryland 20810
Tel: (301)953-1010

B & C Instruments, Inc.
7920 Unit 5, Charlotte Drive
Huntsville, Alabama 35802
Tel: (205)883-6530

MIDWESTERN AREA

Certified Test Equipment Sales, Inc.
601 Easy Street
Garland, Texas 75042
Tel: (214)494-3446

Chris-Tec
5366 Kimberly Road
P. O. Box 1010
Minnetonka, Minnesota 55343
Tel: (612)934-1334

Comtel Instrument Company
5827 Mayfield Road
Cleveland, Ohio 44124
Tel: (216)442-8080

Comtel Standards Laboratory
21223 Hilltop Street
P. O. Box 5034
Southfield, Michigan 48037
Tel: (313)358-2500

Rockford Instrument Lab
1718 Broadway
Rockford, Illinois 61108
Tel: (815)397-1004

WESTERN AREA

General Electric Instrumentation Service
3840 W. Clarendon Street
Phoenix, Arizona 85019
Tel: (602)278-8515

General Electric Instrumentation Service
1401 East Valencia Road
Tucson, Arizona 85706
Tel: (602)294-3139

General Electric Company
Instrumentation and Communication Equip. Service
3770 Paris Street - Unit #3
Denver, Colorado 80239
Tel: (301)320-3250

WESTERN AREA (Cont'd)

J. D. & Associates
1012 Morse Avenue
Suite 6
Sunnyvale, California 94086
Tel: (408)734-5529

Instrument Service Laboratories
630 Haines Avenue N. W.
Albuquerque, New Mexico 87102
Tel: (505)842-1107

Power Specialists Company
10601 Bloomfield Street
Los Alamitos, California 90720
Tel: (213)594-9418

XTEK
14824 Northeast 31st Circle
Redmond, Washington 98052
Tel: (206)885-6969

NEW ENGLAND AREA

Sorensen Company
676 Island Pond Road
Manchester, N. H. 03103
Tel: (603)668-4500

FOREIGN AREA

CANADA

Brunelle Instrument Company
826 Belvedere Street
Sherbrooke, P. Q., Canada J1H4B8
Tel: (819)569-1408

ENGLAND

Cossor Electronics Ltd.
The Pinnacles, Harlow
Essex CM19 5BB England
Tel: Harlow (0279)26862

SWITZERLAND

Sorensen AG
Halbartenstrasse 54
CH 5430 Wettingen
Switzerland
Tel: (056 2651 16)

ISRAEL

Agentex Ltd.
ATIDIM
Scientific Industries Park,
End of Dvora Hanevia Road,
P.O.Box 10150
Tel Aviv 61101
Tel: 03-493111

(3/81)

SORENSEN
POWER SUPPLIES

www.manualsplus.com
1006436

SORENSEN
POWER SUPPLIES

RAYTHEON

88831